

# Lectotype selections for Ordovician trilobites from the Girvan District, Strathclyde

S. F. Morris and R. P. Tripp

Department of Palaeontology, British Museum (Natural History), Cromwell Road, London SW7 5BD

## Synopsis

Thirty-two lectotypes are selected for species of trilobites of Upper Ordovician age described by Etheridge & Nicholson (1878–80) and by Reed (1903–44) from the Girvan District, Strathclyde. A further five lectotypes are selected for species placed in synonymy.

## Introduction

In the course of preparing the *Catalogue of the Type and Figured Specimens of Trilobita in the British Museum (Natural History)* (Morris & Fortey 1985), and a computer catalogue of the Gray Collections (Tripp & Howells 1981), the need to select lectotypes wherever possible has become apparent. The Gray Collection was purchased by the Trustees in 1920 and was received at the Museum in that year; specimens subsequently collected by Mrs Robert Gray and her daughters were presented to the Museum from time to time. T. H. Withers registered the figured, mentioned and named specimens between 1920 and 1924. Most of the remainder of the collection was determined by Tripp and registered by R. Baker between 1947 and 1949. Apart from figured or mentioned specimens, it is uncertain how many specimens were studied by Nicholson & Etheridge or by Reed. In some cases the syntypes are not all conspecific; in many the original drawings are not adequate for comparison. In this paper lectotypes are selected and figured for 32 species considered to be taxonomically valid. In addition, lectotypes are selected for five species placed in synonymy. Species belonging to the family Odontopleuridae are under revision by J. K. Ingham, and are not discussed herein.

The definitive account of the stratigraphy and faunas of the Girvan District is that of Charles Lapworth (1882); this was followed up by the Geological Survey Memoir of Peach & Horne (1899). Both these works made extensive use of Mrs Gray's Collection, and of Nicholson & Etheridge's Monograph based on her collection. More recently the Barr (Llandeilo) and Lower Ardmillan (Caradoc) Series were revised by Williams (1962), and the Drummuck Group (Upper Ashgill) by Harper (1982). The Whitehouse Group (Lower Ashgill) is under revision by Ingham.

## Deposition of Material

The majority of the specimens considered are in the British Museum (Natural History) (BM). Other institutions housing Girvan material are: Hunterian Museum, Glasgow (HM A); British Geological Survey, Edinburgh (BGSE); and Oxford University Museum (OUM).

## Systematics

Family **REMOPLEURIDIDAE** Hawle & Corda, 1847

Genus **REMOPLEURIDES** Portlock, 1843

TYPE SPECIES. By subsequent designation of Miller (1889: 566); *Remopleurides colbii* Portlock (1843: 256), from the Killey Bridge Formation (Ashgill) of Pomeroy district, Co. Tyrone, Northern Ireland.

***Remopleurides asteroideus* Reed, 1935**  
 (Pl. 1, fig. 7)

1935 *Remopleurides asteroideus* Reed: 11; pl. 4, figs 6, 7.

LECTOTYPE. Selected herein: HM A 933 (= BG 2066), from the Starfish Bed, South Threave Formation, of South Threave, near Girvan, Strathclyde. Grid Ref. NS 250038.

***Remopleurides craigensis* Reed, 1935**  
 (Pl. 2, figs 9–11)

1903 *Remopleurides cf. nanus* Leuchtenberg; Reed: 41; pl. 6, figs 16, 17.

1935 *Remopleurides craigensis* Reed: 10; pl. 1, figs 18, 18a.

LECTOTYPE. Selected herein: BGSE 5100 (= JS 5101), original of Reed, 1935: pl. 1, figs 18, 18a, from the Craighead Limestone, Upper Ardwell Group (Caradoc) of Craighead, near Girvan, Strathclyde. Grid Ref. NX 234013.

***Remopleurides nicholsoni* Reed, 1914**  
 (Pl. 1, fig. 8)

1879 *Remopleurides colbii?* Portlock; Nicholson & Etheridge: 146; pl. 10, figs 8, 8a.

1903 *Remopleurides colbii* Portlock; Reed: 36; pl. 5, figs 17, 17a, b.

1914 *Remopleurides nicholsoni* Reed: 12; pl. 2, figs 3–9.

LECTOTYPE. Selected herein: BM In.21038, original of Reed, 1903: pl. 5, figs 17, 17a, b, from the Ladyburn Formation, Upper Drummuck Group (Rawtheyan) of Drummuck, near Girvan, Strathclyde. Grid Ref. NS 235032.

**Genus *TERATORHYNCHUS* Reed, 1903**

TYPE SPECIES. By monotypy; *Remopleurides (Teratorhynchus) bicornis* Reed, 1903, from the Caradoc of Girvan, Strathclyde.

***Teratorhynchus bicornis* (Reed, 1903)**  
 (Pl. 1, figs 1, 4)

1903 *Remopleurides (Teratorhynchus) bicornis* Reed: 33; pl. 5, figs 5–16.

1914 *Telephus salteri* Reed: 16; pl. 2, fig. 11.

1980 *Teratorhynchus bicornis* (Reed); Tripp: 132; pl. 1, fig. 31.

LECTOTYPE. Selected herein: BM In.21009, original of Reed, 1903: pl. 5, figs 5, 6, from the Lower Balclatchie Group (Caradoc) of Dow Hill, near Girvan, Strathclyde. Grid Ref. NX 190960. The holotype, by monotypy, of *Telephus salteri* Reed is BM In.21179, from the Upper Balclatchie Group of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

**Family ASAPHIDAE Burmeister, 1843**

**Genus *ISOTELUS* DeKay, 1824**

TYPE SPECIES. By subsequent designation of Bassler, 1915; *Isotelus gigas* DeKay, 1824, from middle Ordovician of New York State, U.S.A.

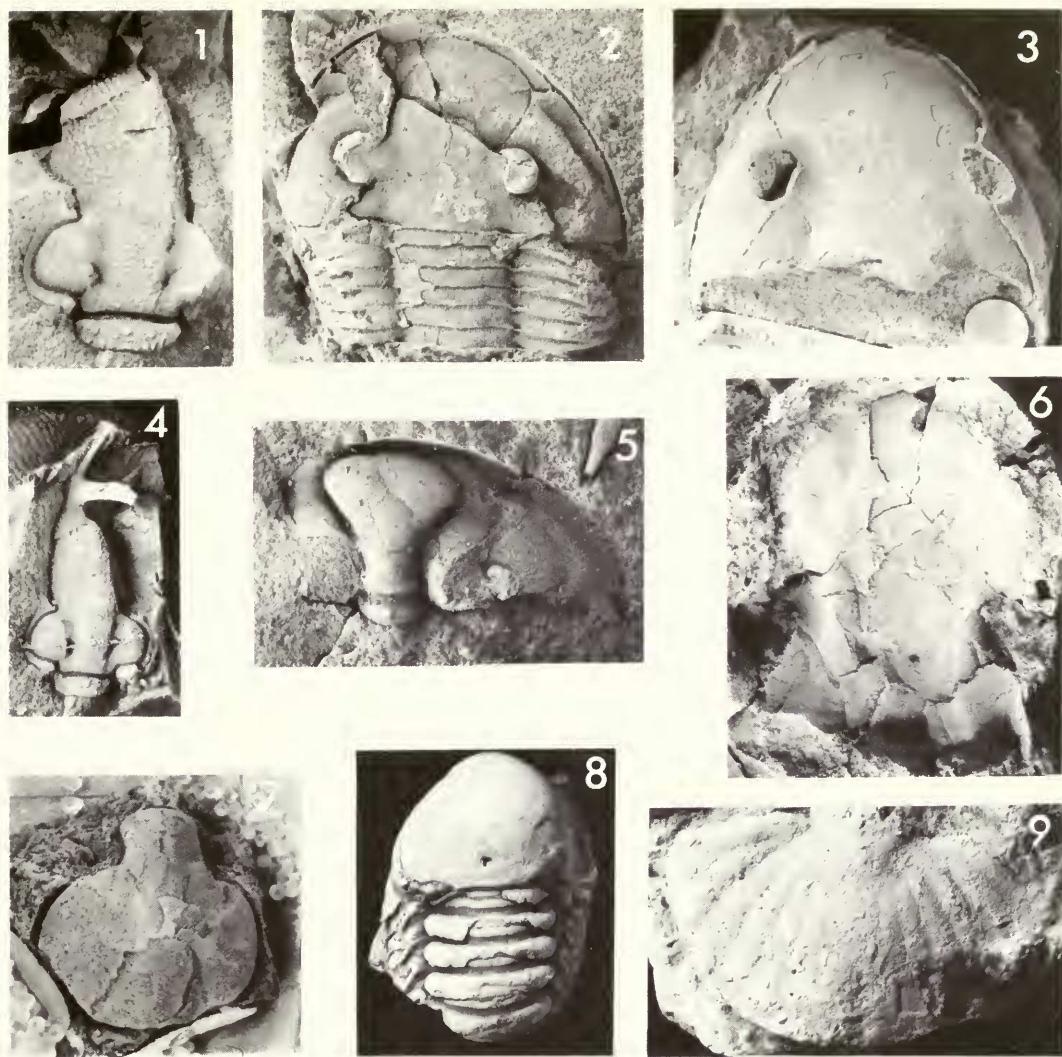
***Isotelus girvanensis* (Reed, 1931)**  
 (Pl. 1, fig. 3)

1903 *Asaphus (Isotelus) gigas* DeKay; Reed: 45; pl. 7, fig. 1.

1931 *Asaphus (Isotelus) girvanensis* Reed: 10.

1980 *Isotelus girvanensis* (Reed); Tripp: 132.

LECTOTYPE. Selected herein: BM In.21560, original of Reed, 1903: pl. 7, fig. 1, from the Lower Ardwell Group (Caradoc) of Ardmillan, near Girvan, Strathclyde. Grid Ref. NX 168940.



## PLATE 1

- Figs 1, 4** *Teratorhynchus bicornis* (Reed, 1903), Lower Balclatchie Group, Dow Hill. Cranidium, figd Reed, 1903: pl. 5, figs 5, 6. BM In.21009. Fig. 1,  $\times 3$ ; Fig. 4, latex cast from external mould,  $\times 1.75$ .
- Fig. 2** *Isotelus instabilis* (Reed, 1903), Lower Balclatchie Group, Dow Hill. Cephalon and 6 thoracic segments, figd Reed, 1904: pl. 7, fig. 6. BM In.21584.  $\times 3$ .
- Fig. 3** *Isotelus girvanensis* (Reed, 1931), Lower Ardwell Group, Ardmillan. Cephalon, figd Reed, 1904: pl. 7, fig. 1. BM In.21560,  $\times 2.2$ .
- Fig. 5** *Raymondaspis ardmillanensis* (Reed, 1904), Lower Ardwell Group, Ardmillan. Cephalon, figd Reed, 1904: pl. 13, figs 1, 1a. BM In.22675.  $\times 3$ .
- Fig. 6** *Isotelus grayae* (Reed, 1914), Upper Balclatchie Group, Balclatchie. Cranidium, figd Reed, 1914: pl. 3, fig. 2. BM In.21567.  $\times 2.2$ .
- Fig. 7** *Remopleurides asteroideus* (Reed, 1935), South Threave Formation, Starfish Bed. Cranidium, figd Reed, 1935: pl. 4, fig. 6. HM A 933.  $\times 4$ .
- Fig. 8** *Remopleurides nicholsoni* Reed, 1914, Ladyburn Formation, Drummuck. Cephalon and 4 thoracic segments, figd Reed, 1903: pl. 5, figs 17, 17a, 17b. BM In.21038.  $\times 1.75$ .
- Fig. 9** *Eobronteus craigensis* (Reed, 1904). Upper Ardwell Group, Craighead Quarry. Pygidium, figd Reed, 1904: pl. 12, fig. 12. BM In.22668.  $\times 1.75$ .

***Isotelus grayae* (Reed, 1914)**  
 (Pl. 1, fig. 6)

- 1914 *Asaphus (Isotelus) grayae* Reed: 16; pl. 3, figs 1–6.  
 1931 *Asaphus (Isoteloides) grayae* Reed; Reed: 10.  
 1980 *Isotelus grayae* (Reed); Tripp: 132.

LECTOTYPE. Selected herein: BM In.21567, original of Reed, 1914: pl. 3, fig. 2, from the Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

***Isotelus instabilis* (Reed, 1903)**  
 (Pl. 1, fig. 2)

- 1903 *Asaphus (Isotelus) instabilis* Reed: 46.  
 1904 *Asaphus (Isotelus) instabilis* Reed; Reed: pl. 7, figs 2–8.  
 1980 *Isotelus instabilis* (Reed); Tripp: 132.

LECTOTYPE. Selected herein: BM In.21584, original of Reed, 1904: pl. 7, fig. 6, from the Lower Balclatchie Group (Caradoc) of Dow Hill, near Girvan, Strathclyde. Grid Ref. NX 192961.

Family STYGINIDAE Vogdes, 1890  
 Genus ***RAYMONDASPIS*** Přibyl, 1949

TYPE SPECIES. By subsequent designation of Miller (1889: 550); *Holometopus limbatus* Angelin, 1854, from the *expansus* or *lepidurus* Zone (late Arenig–early Llanvirn) of Fågelsång, Scania, Sweden.

***Raymondaspis ardmillanensis* (Reed, 1904)**  
 (Pl. 1, fig. 5)

- 1904 *Bronteopsis ardmillanensis* Reed: 92; pl. 13, figs 1–4.  
 1914 *Bronteopsis ardmillanensis* Reed; Reed: 26; pl. 4, fig. 7.  
 1980 *Raymondaspis ardmillanensis* (Reed) Tripp: 132.

LECTOTYPE. Selected herein: BM In.22675, original of Reed, 1904: pl. 13, figs 1, 1a, from the Lower Ardwell Group (Caradoc) of Ardmillan, near Girvan, Strathclyde. Grid Ref. NX 168940.

Family SCUTELLUIDAE Richter & Richter, 1955  
 Genus ***EOBRONTEUS*** Reed, 1928

TYPE SPECIES. By original designation; *Entomostracites laticauda* Wahlenberg, 1818, from the Upper Leptaena Limestone (Ashgill) of Dalarna, Sweden.

***Eobronteus craigensis* (Reed, 1904)**  
 (Pl. 1, fig. 9)

- 1904 *Bronteus craigensis* Reed: 89; pl. 12, figs 12, 13.  
 1928 *Bronteus (Eobronteus) craigensis* Reed; Reed: 51.  
 1980 *Eobronteus craigensis* (Reed); Tripp: 149.

LECTOTYPE. Selected herein: BM In.22668, original of Reed, 1904: pl. 12, fig. 12, from the Craighead Limestone (Caradoc) of Craighead Quarry, near Girvan, Strathclyde. Grid Ref. NX 234013.

Genus ***FAILLEANA*** Chatterton & Ludvigsen, 1976

TYPE SPECIES. By original designation; *Failleana calva* Chatterton & Ludvigsen, 1976, from middle Ordovician of Canada.

***Failleana?* *memorabilis*** (Reed, 1906)  
 (Pl. 2, fig. 8)

- 1904 *Illaenus* cf. *oculosus* Holm; Reed: 71; pl. 10, fig. 11.  
 1906 *Illaenus memorabilis* Reed: 165; pl. 20, fig. 9.

LECTOTYPE. Selected herein: BM In.21814, original of Reed, 1906: pl. 20, fig. 9, from the Lower Balclatchie Group (Caradoc) of Dow Hill, near Girvan, Strathclyde. Grid Ref. NX 192961.

REMARKS. This cranidium is clearly that of an effaced scutelluid, as evinced by the long rhachial furrows and fossulae. In these features it resembles *Failleana* Chatterton & Ludvigsen, 1976, but the eyes are situated more posteriorly than in other members of that genus, and we attribute *memorabilis* to it with reserve.

Family **ILLAENIDAE** Hawle & Corda, 1847

Genus ***ILLAENUS*** Dalman, 1827

TYPE SPECIES. By subsequent designation of Pictet, 1854: 515; *Entomostracites crassicauda* Wahlenberg, 1818, from the Crassicauda Limestone (Llandeilo) of Fjäcka, Dalarna, Sweden.

***Illaenus peachi*** Reed, 1914  
 (Pl. 2, fig. 2)

- 1914 *Illaenus peachi* Reed: 24; pl. 4, figs 2, 3, 3a.

LECTOTYPE. Selected herein: BM In.21909, original of Reed, 1914: pl. 4, figs 3, 3a, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

***Illaenus richardsoni*** Reed, 1914  
 (Pl. 2, fig. 5)

- 1914 *Illaenus richardsoni* Reed: 25; pl. 4, figs 4, 5, 5a.

LECTOTYPE. Selected herein: BM In.21913, original of Reed, 1914: pl. 4, figs 5, 5a, from the Lower Ardwell Group (Caradoc) of Ardmillan, near Girvan, Strathclyde. Grid Ref. NX 169938.

Genus ***NANILLAENUS*** Jaanusson, 1954

TYPE SPECIES. By original designation; *Illaenus conradi* Billings, 1859, from middle Ordovician, Black River Group of Ottawa, Canada.

***Nanillaenus superstes*** (Reed, 1944)  
 (Pl. 2, fig. 7)

- 1904 *Illaenus* cf. *oculosus* Holm; Reed: 71; pl. 10, figs 9, 10.  
 1944 *Illaenus superstes* Reed: 59; pl. 2, figs 3–6.  
 1980 *Nanillaenus superstes* (Reed) Tripp: 132.

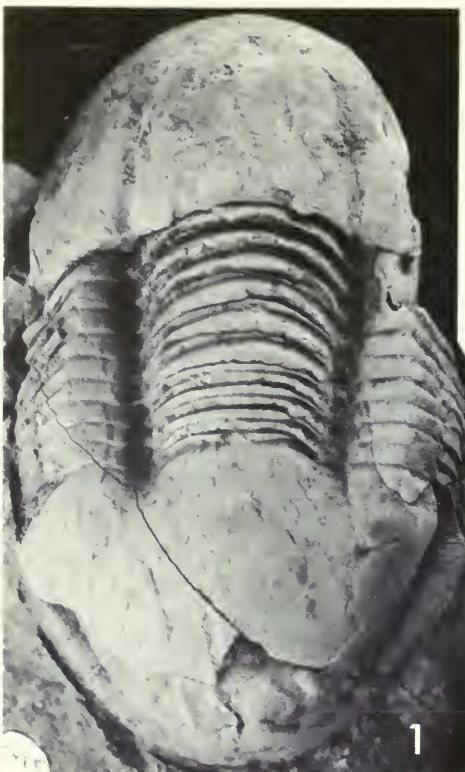
LECTOTYPE. Selected herein: HM A 3630, original of Reed, 1944: pl. 2, figs 3, 3a, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

Genus ***STENOPAREIA*** Holm, 1886

TYPE SPECIES. By original designation; *Illaenus Linnarssonii* Holm, 1882, from the Boda Limestone (Ashgill) of Dalarna, Sweden.

***Stenopareia balclatchiensis*** (Reed, 1904)  
 (Pl. 2, fig. 6)

- 1904 *Illaenus balclatchiensis* Reed: 56; pl. 8, figs 12–16.  
 1935 *Illaenus balclatchiensis cristata* Reed: 24; pl. 3, fig. 2.  
 1980 *Stenopareia balclatchiensis* (Reed) Tripp: 127; pl. 2, fig. 9.



1



2



3



4



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8



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LECTOTYPE. Selected Tripp (1980: 127), original of Reed, 1904: pl. 8, fig. 14, BM In.21730, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969. (In Tripp (1980) the register number of the lectotype was wrongly quoted as BM In.21727; it should have been as given above.) The holotype, by monotypy, of *cristata* Reed is HM A 935 (BG 25), from the Lower Balclatchie Group (Caradoc) of Dow Hill, near Girvan, Strathclyde. Grid Ref. NX 192961.

REMARKS. Tripp (1980: pl. 2, fig. 2) illustrated BM In.21722 both as the lectotype (= BM In.21730) and as BM In.21727.

***Stenopareia nexilis* (Salter, 1867)**  
(Pl. 2, fig. 1)

- 1867 *Illaenus (Dysplanus) nexilis* Salter: 190; pl. 30, figs 4, 5.  
 1935 *Illaenus fluvalis* Reed: 13; pl. 2, figs 1–3.  
 1935 *Illaenus longicapitatus subcarinata* Reed: 19; pl. 2, figs 8, 8a.  
 1944 *Illaenus drummuckensis* Reed in Reed & Begg: 260; pl. 1, figs 3, 4.  
 1982 *Stenopareia nexilis* (Salter) Howells: 13.

LECTOTYPE. Selected herein: OUM C2, original of Salter, 1867: pl. 30, fig. 4, from the Ladyburn Formation? (Rawtheyan) of Drummuck, near Girvan, Strathclyde. Grid Ref. NS 235032. The lectotype of *Illaenus fluvalis* Reed, selected herein, is BGSE 5101, original of Reed, 1935: pl. 2, fig. 1; the lectotype of *subcarinata* Reed, selected herein, is BGSE 5108, original of Reed, 1935: pl. 2, fig. 8. The holotype of *drummuckensis* Reed is HM A 3687 (= BG 6454). The last three taxa are all from the South Threave Formation (Rawtheyan) of South Threave Farm, near Girvan, Strathclyde. Grid Ref. NS 250038.

REMARKS. There is no evidence of the occurrence of more than one species of *Stenopareia* in the Upper Drummuck Group of the Girvan district.

Family AULACOPLEURIDAE Angelin, 1854

Genus ***OTARION*** Zenker, 1833

TYPE SPECIES. By monotypy; *Otarion diffractum* Zenker, 1833, from the Kopanina Beds (Ludlow) of Dlouhá hora, near Beroun, Czechoslovakia.

**PLATE 2**

- Fig. 1** *Stenopareia nexilis* (Salter, 1867), Ladyburn Formation, Drummuck. Dorsal shield, figd Salter, 1867: pl. 30, fig. 5. OUM C.2. × 1·5.
- Fig. 2** *Illaenus peachi* Reed, 1914, Upper Balclatchie Group, Balclatchie. Cranidium, figd Reed, 1914: pl. 4, figs 3, 3a. BM In.21909. Oblique anterior view, × 2.
- Fig. 3** *Otarion* (s.l.) *tumidum* Reed, 1935, Upper Balclatchie Group, Balclatchie. Cranidium, figd Reed, 1935: pl. 1, fig. 21. BM In.36921. × 7.
- Fig. 4** *Toernquistia translata* (Reed, 1931), Upper Balclatchie Group, Balclatchie. Cranidium, figd Reed, 1906: pl. 12, fig. 3. BM In.22641. × 5.
- Fig. 5** *Illaenus richardsoni* Reed, 1914, Lower Ardwell Group, Ardmillan. Cranidium, figd Reed, 1914: pl. 4, figs 5, 5a. BM In.21913. Oblique anterior view, × 2·5.
- Fig. 6** *Stenopareia balclatchiensis* (Reed, 1904), Upper Balclatchie Group, Balclatchie. Dorsal shield lacking free cheeks, figd Reed, 1904: pl. 8, fig. 14. BM In.21730. × 3.
- Fig. 7** *Nanillaenus superstes* (Reed, 1944), Upper Balclatchie Group, Balclatchie. Disassociated dorsal shield, figd Reed, 1944: pl. 2, figs 3, 3a. HM A 3630. × 4.
- Fig. 8** *Failleana?* *memorabilis* (Reed, 1906), Lower Balclatchie Group, Dow Hill. Cranidium, figd Reed, 1906: pl. 20, fig. 9. BM In.21814. × 2.
- Figs 9–11** *Remopleurides craigensis* Reed, 1935, Upper Ardwell Group, Craighead. Cranidium, figd Reed, 1935: pl. 1, fig. 18. BGSE 5100. Left lateral, anterior and dorsal views, × 3.

***Otarion* (s.l.) *tumidum* Reed, 1935  
(Pl. 2, fig. 3)**

1935 *Otarion tumidus* Reed: 43; pl. 1, figs 21, 21a.

LECTOTYPE. Selected herein: BM In.36961, original of Reed, 1935: pl. 1, figs 21, 21a, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

Subgenus ***AULACOPLEURA*** Hawle & Corda, 1847

TYPE SPECIES. By monotypy; *Arethusina Koninckii* Barrande, 1846: 48, from the Wenlock Series of Czechoslovakia.

***Otarion (Aulacopleura) reedi* (Přibyl, 1947)  
(Pl. 3, fig. 2)**

1904 *Arethusina konincki?* Barrande; Reed: 83; pl. 11, figs 14, 15.

1947 *Aulacopleura (Paraaulacopleura) reedi* Přibyl: 541.

1980 *Otarion (Aulacopleura) reedi* (Přibyl) Tripp: 132.

LECTOTYPE. Selected herein: BM In.21972, original of Reed, 1904: pl. 11, fig. 14, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

Family **DIMEROPYGIDAE** Hupé, 1953

Genus ***TOERNQUISTIA*** Reed, 1896

TYPE SPECIES. By subsequent designation of Warburg, 1925: 198; *Cyphaspis (Törnquistia) nicholsoni* Reed, 1896, from the Keisley Limestone (Ashgill) of Keisley Quarry, Cumbria. Grid Ref. NY 713238.

***Toernquistia translata* (Reed, 1931)  
(Pl. 2, fig. 4)**

1904 *Menocephalus?* (*Törnquistia*) cf. *nicholsoni* Reed: 86; pl. 12, figs 3–7.

1931 *Hystricurus translatus* Reed: 8.

1980 *Toernquistia translata* (Reed) Tripp: 132.

LECTOTYPE. Selected herein: BM In.22641, original of Reed, 1904: pl. 12, fig. 3, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

Family **RAPHIOPHORIDAE** Angelin, 1854

Genus ***AMPYX*** Dalman, 1827

TYPE SPECIES. By monotypy; *Asaphus (Ampyx) nasutus* Dalman, 1827, from the Upper Arenig of Västanå, Sweden.

***Ampyx hornei* Etheridge & Nicholson, 1879  
(Pl. 3, fig. 1)**

1879 *Ampyx hornei* Etheridge & Nicholson: 184; pl. 13, figs 4–10.

1903 *Ampyx hornei* Etheridge & Nicholson; Reed: 19; pl. 3, figs 8–10.

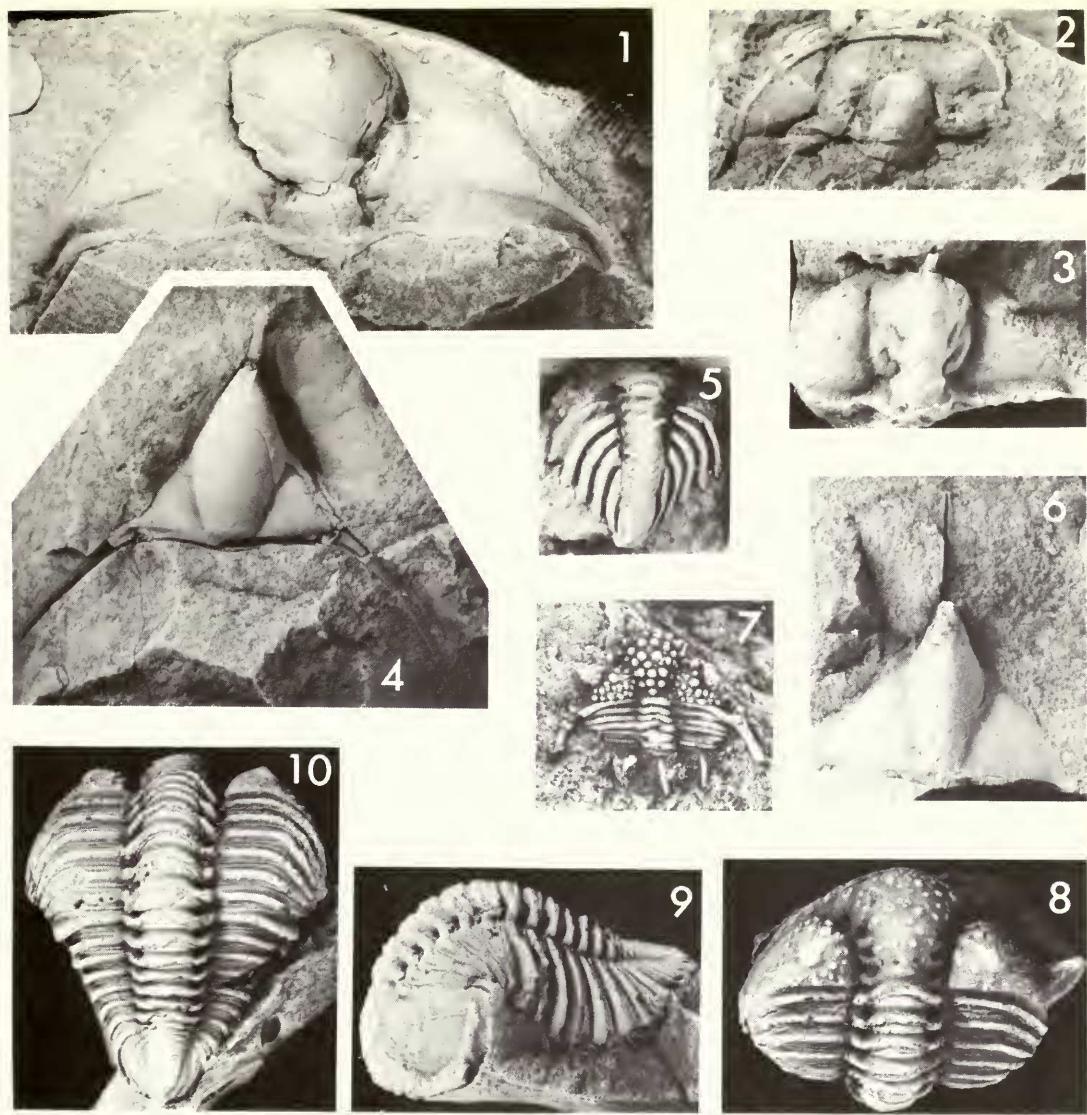
LECTOTYPE. Selected herein: BM In.20829, original of Etheridge & Nicholson, 1879: pl. 13, fig. 4, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

***Ampyx incurvus* Reed, 1906  
(Pl. 3, fig. 3)**

1906 *Ampyx incurvus* Reed: 161; pl. 20, figs 6–8.

1980 *Ampyx incurvus* Reed; Tripp: 133; pl. 3, figs 6, ??.

LECTOTYPE. Selected herein: BM In.20794, original of Reed, 1906: pl. 20, fig. 7, from the Upper Balclatchie (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.



### PLATE 3

- Fig. 1** *Ampyx hornei* Etheridge & Nicholson, 1879, Upper Balclatchie Group, Balclatchie. Craniidium, figd Nicholson & Etheridge, 1879: pl. 13, fig. 4 and Reed, 1903: pl. 3, fig. 8. BM In.20829.  $\times 2\cdot2$ .
- Fig. 2** *Otarion (Aulacopleura) reedi* (Přibyl, 1947), Upper Balclatchie Group, Balclatchie. Cephalon, figd Reed, 1906: pl. 11, fig. 14. BM In.21972.  $\times 7$ .
- Fig. 3** *Ampyx incurvus* Reed, 1906, Lower Ardwell Group, Ardmillan. Cranidium, figd Reed, 1906: pl. 20, fig. 7. BM In.20794.  $\times 2\cdot8$ .
- Fig. 4** *Lonchodus drummuckensis* (Reed, 1903), Ladyburn Formation, Drummuck. Figd Reed, 1903: pl. 3, fig. 1. BM In.20812.  $\times 1\cdot75$ .
- Fig. 5** *Encrinuroides contentus* (Reed, 1914), Upper Balclatchie Group, Balclatchie. Pygidium, figd Reed, 1914: pl. 6, fig. 11. BM In.23231.  $\times 2\cdot75$ .
- Fig. 6** *Lonchodus macallumi* (Etheridge & Nicholson, 1879), Upper Balclatchie Group, Balclatchie. Cranidium, figd Nicholson & Etheridge, 1879: pl. 13, fig. 10. BM In.20846.  $\times 2\cdot8$ .
- Fig. 7** *Erratenocrinus (Celtencrinurus) trispinosus* (Reed, 1914), South Threave Formation, Starfish Bed. Figd Reed, 1914: pl. 7, fig. 5. BM In.23225.  $\times 2\cdot5$ .
- Figs 8–10** *Atractopyge michelli* (Reed, 1914), Lower Ardwell Group, Ardwell. Dorsal shield, figd Reed, 1914: pl. 7, figs 7, 7a, 7b, 7c. BM In.23310. Dorsal, left lateral and oblique posterior views,  $\times 2$ .

Genus **LONCHODOMAS** Angelin, 1854

TYPE SPECIES. By subsequent designation of Vogdes, 1893: 100; *Ampyx rostratus* Sars, 1835, from the high Lower Ordovician of Huk, Norway.

***Lonchodomas drummuckensis*** (Reed, 1903)  
(Pl. 3, fig. 4)

- 1903 *Ampyx drummuckensis* Reed: 18; pl. 3, figs 1–5.  
1931 *Ampyx (Lonchodomas) drummuckensis* Reed; Reed: 4.

LECTOTYPE. Selected herein: BM In.20812, original Reed, 1903: pl. 3, fig. 1, from the Ladyburn Formation (Rawtheyan) of Drummuck, near Girvan, Strathclyde. Grid Ref. NS 235032.

***Lonchodomas macallumi*** (Etheridge & Nicholson, 1879)  
(Pl. 3, fig. 6)

- 1865 *Ampyx M'Callumi* Salter: 18 (*nom. nud.*).  
1879 *Ampyx macallumi* Salter; Etheridge & Nicholson: 180; pl. 13, figs 9–12.  
1903 *Ampyx macallumi* Salter; Reed: 21; pl. 3, figs 11, 12.  
1980 *Lonchodomas macallumi* (Salter) Tripp: 133.

LECTOTYPE. Selected herein: BM In.20846, original of Etheridge & Nicholson, 1879: pl. 13, fig. 10, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

## Family ENCRINURIDAE Angelin, 1854

## Subfamily CYBELINAE Holliday, 1942

Genus **ATRACTOPYGE** Hawle & Corda, 1847

TYPE SPECIES. By monotypy; *Calymene verrucosa* Dalman, 1827: 100, from the Pusgill/Ashgill of Llandeilo, Dyfed, south Wales.

***Atractopyge michelli*** (Reed, 1914)  
(Pl. 3, figs 8–10)

- 1914 *Cybele michelli* Reed: 42; pl. 7, figs 7, 7a–c.  
1935 *Cybele (Cybele) nicholsoni* Reed: 52; pl. 4, fig. 4.  
1935 *Cybele (Cybele) nicholsoni?* Reed; Reed: 52; pl. 2, fig. 14.  
1951 *Cybele nicholsoni* Reed; Begg: 367; pl. 1, fig. 14.  
1980 *Atractopyge michelli* (Reed) Tripp: 133; pl. 4, fig. 10.

LECTOTYPE. Selected herein: BM In.23285, original of Reed, 1914: pl. 7, figs 7, 7a–c, from the Lower Ardwell Group (Caradoc) of Ardmillan Braes, near Girvan, Strathclyde. Grid Ref. NX 169938. The holotype, by monotypy, of *Cybele nicholsoni* Reed is HM A 1042, from the Lower Balclatchie Group (Caradoc) of Dow Hill, near Girvan, Strathclyde. Grid Ref. NX 190960.

REMARKS. *Cybele nicholsoni* Reed, 1935, was based upon an incomplete cranidium which is indistinguishable from *Atractopyge michelli*; we consider it to be a junior subjective synonym of the latter species.

Genus **DINDYMENE** Hawle & Corda, 1847

TYPE SPECIES. By subsequent designation of Barrande, 1852: 816; *Dindymene fridericiaaugusti* Hawle & Corda, 1847, from the Králov Dvůr Formation (Ashgill) of Czechoslovakia.

***Dindymene cordai*** Etheridge & Nicholson, 1878  
(Pl. 4, fig. 5)

- 1878 *Dindymene cordai* Etheridge & Nicholson: 115; pl. 8, fig. 8.  
1906 *Dindymene cordai* Etheridge & Nicholson; Reed: 132; pl. 17, figs 9–11.  
1914 *Dindymene cordai* Etheridge & Nicholson; Reed: 44; pl. 7, figs 8, 9.

LECTOTYPE. Selected herein: BM In.23310, original of Etheridge & Nicholson, 1878: pl. 8, fig. 8 and Reed, 1906: pl. 17, fig. 10, from the Ladyburn Formation (Rawtheyan) of Drummuck, near Girvan, Strathclyde. Grid Ref. NS 235032.

Subfamily **ENCRINURINAE** Angelin, 1854

Genus **ENCRINUROIDES** Reed, 1931

TYPE SPECIES. By original designation; *Cybele sexcostata* Salter, 1848, from the Sholeshook Limestone Formation (Ashgill) of Sholeshook Farm, Haverfordwest, Dyfed, south Wales.

*Enocrinuroides contentus* (Reed, 1914)

(Pl. 3, fig. 5)

1914 *Enocrinurus contentus* Reed: 39; pl. 6, figs 11, 12.

1935 *Cybele* (*Cybele*?) *perversa* Reed: 53; pl. 4, fig. 5.

1980 *Enocrinuroides contentus* (Reed) Tripp: 132.

LECTOTYPE. Selected herein: BM In.23231, original of Reed, 1914: pl. 6, fig. 11, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969. The holotype, by monotypy, of *Cybele perversa* Reed is HM A 1100, from the same horizon and locality.

Genus **ERRATENCRINUS** Krueger, 1972

TYPE SPECIES. By original designation; '*Erratencrinurus*' *capricornu* Krueger, 1971, from the Pleistocene drift Ostseekalk, Stage E (Caradoc) of northern East Germany.

REMARKS. Krueger, 1971, erected *Erratencrinurus* without nominating a type species and therefore invalidly (Art. 36(b); I.C.Z.N. 1985: 37); the genus group name must date from Krueger, 1972 when a type species was nominated.

Subgenus **CELTENCRINUS** Evitt & Tripp, 1977

TYPE SPECIES. By original designation; *Amphion multisegmentatus* Portlock, 1837, from the Kille Bridge Formation (Ashgill) of Northern Ireland.

*Erratencrinurus* (*Celtencrinurus*) *trispinosus* (Reed, 1914)

(Pl. 3, fig. 7)

1914 *Enocrinurus multisegmentatus trispinosus* Reed: 39; pl. 7, figs 1–3.

1935 *Enocrinurus multisegmentatus girvanensis* Reed: 50; pl. 4, fig. 9.

1957 *Enocrinurus trispinosus* Reed; Tripp: 67; pl. 11, figs 15–19; pl. 12, figs 11–17.

LECTOTYPE. Selected herein: BM In.23225, original of Reed, 1914: pl. 7, fig. 3, from the South Threave Formation, Starfish Bed (Rawtheyan) of South Threave Farm, near Girvan, Strathclyde. Grid Ref. NS 250038. The lectotype, selected herein, of *girvanensis* Reed is HM A 1040 (= BG 963), from the same horizon and locality.

Family **CALYMNIDAE** Milne Edwards, 1840

Genus **CALYMENE** Brongniart, 1822

TYPE SPECIES. By original designation; *Calymene Blumenbachii* Brongniart, 1822, from the Much Wenlock Limestone Formation of Wren's Nest, Dudley, West Midlands. [I.C.Z.N. pending].

*Calymene* (s.l.) *drummuckensis* Reed, 1906

(Pl. 4, fig. 1)

1906 *Calymene blumenbachii drummuckensis* Reed: 135; pl. 17, fig. 14; pl. 18, figs 1–4.

1931 *Calymene drummuckensis* Reed; Shirley: 28; pl. 2, figs 7, 8.

1936 *Diacalymene drummuckensis* (Reed) Shirley: 400.

1977 *Calymene* (s.l.) *drummuckensis* Reed; Ingham: 101 only.

LECTOTYPE. Selected herein: BM In.23380, original of Reed, 1906: pl. 18, fig. 2, from the South Threave Formation, Starfish Bed (Rawtheyan) of South Threave Farm, near Girvan, Strathclyde. Grid Ref. NS 250038.

Family PTERYGOMETOPIDAE Reed, 1905

Genus *ACHATELLA* Delo, 1935

TYPE SPECIES. By original designation; *Dalmanites achates* Billings, 1860, from the Trenton Group of the City of Ottawa, Canada.

*Achatella retardata* (Reed, 1914)  
(Pl. 4, fig. 2)

- 1914 *Phacops (Pterygometopus) retardatus* Reed: 49; pl. 8, figs 5–7.
- 1931 *Phacops (Pterygometopus) retardatus* Reed; Reed: 24.
- 1943 *Phacops (Pterygometopus) retardatus* Reed; Begg: 60; pl. 2, fig. 10.
- 1981 *Achatella retardata* (Reed) Tripp & Howells: fiches 1, 2.

LECTOTYPE. Selected herein: BM In.23603, original of Reed, 1914: pl. 8, figs 5, 5a, b, from the South Threave Formation, Starfish Bed (Rawtheyan) of South Threave Farm, near Girvan, Strathclyde. Grid Ref. NS 250038.

Genus *CALYPTAULAX* Cooper, 1930

TYPE SPECIES. By original designation; *Calyptaulax glabella* Cooper, 1930, from the Matapédia Group (Ashgill) of Percé, Quebec, Canada.

*Calyptaulax asteroideus* (Reed, 1914)  
(Pl. 4, fig. 4)

- 1914 *Phacops (Dalmanitina?) asteroideus* Reed: 53; pl. 8, figs 10, 11.
- 1931 *Phacops (Calyptaulax) asteroideus* Reed; Reed: 24.

LECTOTYPE. Selected herein: BM In.23622, original of Reed, 1914: pl. 8, fig. 10, from the South Threave Formation, Starfish Bed (Rawtheyan) of South Threave Farm, near Girvan, Strathclyde. Grid Ref. NS 250038.

*Calyptaulax hunteri* (Reed, 1914)  
(Pl. 4, fig. 3)

- 1914 *Phacops (Pterygometopus) hunteri* Reed: 52; pl. 8, figs 8, 9.
- 1931 *Phacops (Calyptaulax) hunteri* Reed; Reed: 24.

LECTOTYPE. Selected herein: BM In.23612, original of Reed, 1914: pl. 8, fig. 8, from the Upper Balclatchie Group (Caradoc) of Balclatchie, near Girvan, Strathclyde. Grid Ref. NX 256969.

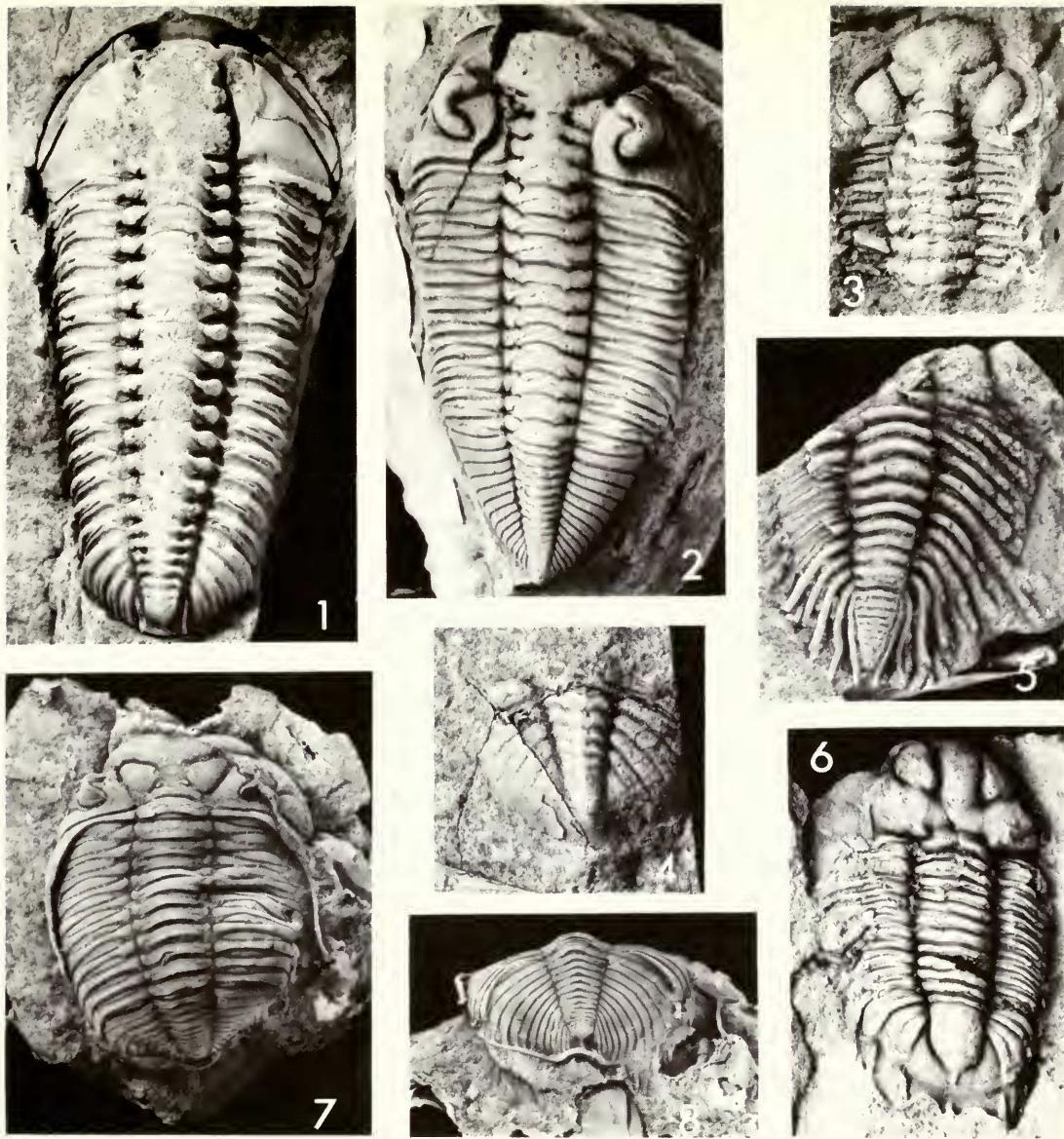
Genus *TOXOCHASMOPS* McNamara, 1979

TYPE SPECIES. By original designation; *Trilobites extensus* Boeck, 1838, from the Caradoc of Gåsøkalven, Baerum, Norway.

*Toxochasmops bisseti* (Reed, 1906)  
(Pl. 4, figs 7, 8)

- 1906 *Phacops (Chasmops) bisseti* Reed: 157; pl. 20, figs 1–3.
- 1931 *Phacops (Chasmops) bisseti* Reed; Reed: 25.
- 1981 *Toxochasmops bisseti* (Reed) Tripp & Howells: fiches 1, 2.

LECTOTYPE. Selected herein: BGSE 4368–9, original of Reed, 1906: pl. 20, figs 1, 2, from the South Threave Formation, Starfish Bed (Rawtheyan) of South Threave Farm, near Girvan, Strathclyde. Grid Ref. NS 250038.



#### PLATE 4

- Fig. 1** *Calymene* (s.l.) *drummuckensis* Reed, 1906, South Threave Formation, Starfish Bed. Dorsal shield, figd Reed, 1906: pl. 18, fig. 2. BM In.23380.  $\times 1\cdot1$ .
- Fig. 2** *Achatella retardata* (Reed, 1914), South Threave Formation, Starfish Bed. Dorsal shield, figd Reed, 1914: pl. 8, figs 5, 5a, 5b. BM In.23603.  $\times 2$ .
- Fig. 3** *Calyptaulax hunteri* (Reed, 1914), Upper Balclatchie Group, Balclatchie. Cranidium and 7 thoracic segments, figd Reed, 1914: pl. 8, fig. 8. BM In.23612.  $\times 3\cdot75$ .
- Fig. 4** *Calyptaulax asteroideus* (Reed, 1914), South Threave Formation, Starfish Bed. Pygidium, figd Reed, 1914: pl. 8, fig. 10. BM In.23622.  $\times 2$ .
- Fig. 5** *Dindymene cordai* Etheridge & Nicholson, 1878, Ladyburn Formation, Drummuck. Incomplete dorsal shield, figd Nicholson & Etheridge, 1878: pl. 8, fig. 8 and Reed, 1906: pl. 17, fig. 10. BM In.23310.  $\times 3$ .
- Fig. 6** *Hemiarges maccullochi* (Reed, 1914), South Threave Formation, Starfish Bed. Dorsal shield, figd Reed 1914: pl. 4, fig. 9. BM In.22744.  $\times 2$ .
- Figs 7, 8** *Toxochasmops bissetti* (Reed, 1906), South Threave Formation, Starfish Bed. Plan and posterior views of latex cast from external mould, figd Reed, 1906: pl. 20, figs 1, 2. BGSE 4368-9.  $\times 1$ .

## Family LICHIDAE Hawle &amp; Corda, 1847

Genus *HEMIARGES* Gürich, 1901

TYPE SPECIES. By subsequent designation of Reed, 1902: 61; *Lichas (Arges) Wesenbergensis* Schmidt, 1885, from the Rakvere Limestone (Caradoc) of Estonia.

*Hemiarges maccullochi* (Reed, 1914)  
(Pl. 4, fig. 6)

- 1914 *Lichas (Corydocephalus) maccullochi* Reed: 28; pl. 4, figs 9, 10.  
1958 *Hemiarges maccullochi* (Reed) Tripp: 577.

LECTOTYPE. Selected herein: BM In.22744, original of Reed, 1914: pl. 4, fig. 9, from the South Threave Formation, Starfish Bed (Rawtheyan) of South Threave Farm, near Girvan, Strathclyde. Grid Ref. NS 250038.

REMARKS. This is the type species of *Choneilobarges* Phleger, 1936.

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